REMARKS

I. Introduction

Claims 1, 2, 4-12 and 14-21 are pending in this application, of which claims 1 and 11 are independent. All the claims stand rejected.

In this Amendment, claims 1 and 11 have been amended, and new claim 24 has been added. Care has been exercised to avoid the introduction of new matter. Specifically, claims 1 and 11 have been amended to clarify the present invention. Now, claim 1 recites that "the protection tube is inserted in the plasma chamber and comprises a plurality of pieces disposed in relation to a distribution of temperatures in the plasma chamber during the plasma processing." Claim 11 also recites that "the protection tube is inserted in the sample chamber and comprises a plurality of pieces disposed in relation to a distribution of temperatures in the sample chamber during the plasma processing." Adequate descriptive support for the amendment of claims 1 and 11, and new claim 24 can be found in, for example, Figs. 3A and 3B and relevant description of the specification.

II. The Rejection of Claims 1, 2, 4-12 and 14-21 under 35 U.S.C. §112, second paragraph

The Advisory Action dated June 26, 2006, indicated that "[t]he Examiner maintains that the recitations in independent claims 1 and 11 of 'a plurality of pieces formed in relation to a distribution of temperatures in the... chamber during the plasma processing,' and the recitation that 'each of the plurality of pieces is shorter in axial length than a piece disposed at a location where a gradient of the temperatures at the time of the plasma processing is smaller' render the claims indefinite" (the second full paragraph at page 2 of the Advisory Action). The Examiner

alleged that the distribution of temperatures in the plasma or sample chamber, and the distribution of temperature gradients, may vary in the claimed apparatus because:

(a) the apparatus recited in the claims could include additional structural components that could alter the distribution and gradient of temperatures;

(b) the distribution and gradient of temperature may vary depending, for example, on the type of processing performed using the apparatus or environmental factors; and

(c) the distribution and gradient of temperatures may vary depending, for example, on the length of time processing that has already been performed.

This rejection is respectfully traversed as legally erroneous. Indefiniteness under the second paragraph of 35 U.S.C. § 112 is a question of law. *Zoltek Corp. v. United States*, 57 USPQ2d 1257 (Fed. Cir. 2000); *Personalized Media Communications LLC v. U.S. International Trade Commission*, 161 F.3d 696, 48 USPQ2d 1880 (Fed. Cir. 1998); *Tillotson Ltd. v. Walbro Corp.*, 831 F.2d 1033, 4 USPQ2d 1450 (Fed. Cir. 1987); *Orthokinetics Inc. v. Safety Travel Chairs Inc.*, 806 F.2d 1565, 1 USPQ2d 1081 (Fed. Cir. 1986). Accordingly, in rejecting a claim under the second paragraph of 35 U.S.C. § 112, the Examiner must provide a basis and fact and/or cogent technical reasoning to support the ultimate legal conclusion that one having ordinary skill in the art, with the supporting specification in hand, would not be able to reasonably ascertain the scope or protection defined by a claim. *In re Okuzawa*, 537 F.2d 545, 190 USPQ 464 (CCPA 1976). Significantly, consistent judicial precedent holds that reasonable precision in light of the particular subject matter involved is all that is required by the second paragraph of 35 U.S.C. § 112. *Zoltek Corp. v. United States, supra; Miles Laboratories, Inc. v. Shandon, Inc.*, 997 F.2d 870, 27 USPQ2d 1123 (Fed. Cir. 1993); *North American Vaccine, Inc., v. American Cyanamid Co.*, 7 F.3d 1571, 28 USPQ2d 1333 (Fed. Cir. 1993); *U.S. v. Telectronics*

Inc., supra; Hybritech, Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 231 USPQ (Fed. Cir. 1986). Applicants stress that claims must be interpreted as one having ordinary skill in the art would have interpreted the claims in light of and consistent with the supporting specification. *Zoltek Corp. v. United States, supra; Miles Laboratories, Inc. v. Shandon, Inc., supra.*

In applying the above legal tenets to this case, Applicants submit that the Examiner did not discharge the initial burden of providing a basis in fact and/or cogent technical reasoning to support the ultimate legal conclusion that one having ordinary skill in the art would not be able to ascertain the scope of protection defined by the claims, when reasonably interpreted in light of and consistent with the supporting specification. Specifically, the Examiner did not provide any evidential support as to why the claimed invention is indefinite. The Examiner's assertion regarding reasons (a) to (c) are simply speculation.

Even if a temperature distribution in a plasma or sample chamber varies in each plasma processing apparatus, persons skilled in the art can determine the temperature distribution and properly set a suitable protection tube in each plasma processing apparatus. This does not render the claimed invention indefinite.

Applicants invite the Examiner's attention to *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1 USPQ2d 1081 (Fed. Cir. 1986). Claim 1 of Orthokinetics' patent at issue relates to a travel chair, and recites that "said front leg portion is so dimensioned as to be insertable through the space between the doorframe of an automobile and one of seats thereof" (emphasis added). The district court concluded that an individual desiring to build a noninfringing travel chair cannot tell whether that chair violates Orthokinetics' patent until he constructs a model and tests the model on vehicles ranging from a Honda Civic to a Lincoln Continental to a Checker cab, and without those cars, "so dimensioned" is without meaning.

However, the Federal Circuit held that a claim is valid under 35 U.S.C. §112, second paragraph if those skilled in the art would understand what is claimed when the claim is read in light of the specification. The claims require that one desiring to build and use a travel chair must measure the space between the selected automobile's doorframe and its seat and then dimension the front legs of the travel chair so they will fit in that particular space in that particular automobile. Such a task is evident from the specification and that one of ordinary skill in the art would easily have been able to determine the appropriate dimensions. The phrase "so dimensioned" in a claim is as accurate as the subject matter permits, noting that the patent law does not require that all possible lengths corresponding to the spaces in hundreds of different automobiles be listed in the patent, let alone that they be listed in the claims.

In applying the above legal tenets to this case, it is apparent that the recitations "a plurality of pieces each disposed in relation to a distribution of temperatures in the... chamber during the plasma processing" and "each of the plurality of pieces is shorter in axial length than a piece disposed at a location where a gradient of the temperatures at the time of the plasma processing is smaller" are clear for those skilled in the art in light of the specification. The specification of the present application provides guidance for those skilled in the art with how a plurality of pieces are "disposed in relation to a distribution of temperatures in the... chamber during the plasma processing." For example, the specification discloses as follows:

> As described above, the film-forming processing causes a sharp temperature gradient across the plasma chamber 107. Especially, the difference in the temperatures between the plasma chamber 107 and the film-forming chamber 101 is relatively large, so that the protection tube 2 exhibits a sharper temperature gradient at a part closer to the film-forming chamber 101.
>
> Due to the temperature gradient, the protection tube 2 undergoes greater thermal expansion at a part closer to the film-forming chamber 101 than a part farther away from the film-forming chamber 101.

> FIG. 3B illustrates the above mechanism. As shown in FIG. 3B, each sub-tube constituting the protection tube 2 is subjected to a thermal stress 31 to a degree corresponding to the distance from the film-forming chamber 101. In other words, the thermal stress is larger at a location closer to the film-forming chamber 101, and smaller at a location farther away from the film-forming chamber 101.

Page 18, line 12 to page 19, line 1 (emphasis added). Based on the above description, a person skilled in the art can understand a distribution of temperatures in a chamber, and then, determine how a plurality of pieces are disposed based on the distribution of temperatures in the chamber. Accordingly, Applicants submit that one having ordinary skill in the art would have fully understood the scope of the claimed invention, particularly when reasonably interpreted in light of and consistent with the specification.

Applicants briefly respond to the Examiner's reasons (a) to (c). With respect to reason (a), it is noted that in practice, once the structural components are fixed in place in the apparatus, the apparatus is repeatedly used without adding or removing any structural components. As to reason (b), Applicants note that since the type of processing and environmental factors of the apparatus are maintained consistent as much as possible, for example, for mass production, rather than being altered for each processing, the temperature distribution in the chamber does not vary every time the apparatus is used. Regarding reason (c), the plasma processing conditions for an industrially used plasma processing apparatus are not changed on a processing-by-processing basis or in the middle of processing. Applicants emphasize that as discussed above, even if a temperature distribution in a plasma or sample chamber varies, this does not render the claims indefinite.

Based on the foregoing, Applicants submit that the claimed invention is definite and the imposed rejection of claims 1, 2, 4-12 and 14-23 under the second paragraph of 35 U.S.C. §112, second paragraph is not legally viable and, hence, respectfully solicit withdrawal thereof.

III. The Rejection of Claims 1, 2, 6-8 under 35 U.S.C. §103(a)

Claims 1, 2 and 6-8 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Applicants' Admitted Prior Art (AAPA) in view of Carpenter et al.

In the Advisory Action, the Examiner maintained her position, asserting that the recitations in the claims represent an attempt to build a structural definition of the arrangement of the pieces of the protection tube based on recitations of intended use. The Examiner continued to assert that these recitations do not succeed in being structural recitations, since the distribution of temperatures may vary as alleged with respect to the §112, second paragraph rejection. Applicants submit that the Examiner's position is unreasonable because determining whether a limitation is structurally defined is irrelevant to whether the distribution of temperatures may vary. Applicants will address the issue on "intended use" later in relation to *Ex parte Masham*, 2 USPQ2d, 1647.

Again, Applicants stress that the applied combination of the AAPA and Carpenter et al. does not disclose or suggest a plasma processing apparatus including all the limitations recited in independent claim 1. Specifically, the applied combination does not teach, among other things, that the protection tube comprises "a plurality of pieces each disposed in relation to a distribution of temperatures in the plasma chamber," and "each of the plurality of pieces is shorter in axial length than a piece disposed at a location where a gradient of the temperatures at the time of the plasma processing is smaller," as recited in independent claim 1. These limitations structurally define a plasma processing apparatus in which each piece of the protection tube is disposed based on the gradient temperatures of the chamber.

Turning to the prior art, as admitted by the Examiner, the AAPA does not teach the protection tube recited in independent claim 1. Carpenter et al. teaches a protection tube (e.g., liner) that is composed of a plurality of pieces. However, the protection tube is divided into a plurality of pieces simply for the sake of ease in liner replacement. Carpenter et al. is silent on a protection tube composed of a plurality of pieces, each of which is disposed in accordance with the temperature gradient, as claimed.

In addition, the Examiner still maintained her position that the claimed recitations "a plurality of pieces each disposed in relation to a distribution of temperatures in the plasma chamber," and "each of the plurality of pieces [] shorter in axial length than a piece disposed at a location where a gradient of the temperatures at the time of the plasma processing is smaller" are not entitled to be given patentable weight, by applying *Ex parte Masham*, 2 USPQ2d, 1647 (the first full paragraph at page 5 of the March 7, 2006 final Office Action). Applicants again emphasize that *Ex parte Masham* is distinguishable from the pending rejection.

The *Ex parte Masham* case teaches that "a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the *structural* limitations of that claimed" *Id.* at 1648 (emphasis original). Assuming that there is a claim reciting a hammer for hitting a nail and a reference disclosing a hammer for hitting wood, the *Ex parte Masham* case specifically teaches that hitting a nail is intended use of the claimed hammer, and that intended use does not differentiate the claimed hammer from the hammer disclosed in the reference if the claimed hammer and the hammer disclosed in the reference are structurally the same with each other.

Claim 1 recites "a plurality of pieces each disposed in relation to a distribution of temperatures in the plasma chamber," and "each of the plurality of pieces [] shorter in axial

length than a piece disposed at a location where a gradient of the temperatures at the time of the plasma processing is smaller." The recitations are not ones "with respect to the manner in which a claimed apparatus is intended to be employed." See *Id.* The above recitations relates to the pieces of the protection tube which are part of a plasma processing apparatus. Part of the apparatus does not define intended use of the claimed plasma processing apparatus. Accordingly, Applicants again emphasize that *Ex parte Masham* is distinguishable from the pending rejection, and the above recitations are entitled to be given patentable weight.

Applicants further submit that there is no motivation to modify the AAPA based on the teachings of Carpenter et al. to arrive at the claimed invention. Carpenter et al. teaches that a deposition processor chamber liner is composed of a plurality of pieces so that a liner piece can be replaced in order to minimize or eliminate downtime, thermal cycling, and pressure cycling of the deposition processor apparatus. The liner is composed of a plurality of liner pieces for allowing easy replacement of the liner pieces, but not for protecting the protection tube from temperature gradient or breakages. In addition, Carpenter et al. is silent on the positional relation between the plasma chamber and each pieces of the protection tube. Furthermore, Carpenter et al. does not even mention plasma processing. Accordingly, it is submitted that, in the absence of the teachings of the claimed invention, there is no evidentiary basis for modification of the AAPA based on Carpenter et al. to arrive at the claimed invention.

Based upon the foregoing, Applicants submit that the Examiner has not established a *prima facie* basis to deny patentability to the claimed invention for lack of the requisite factual basis and want of the requisite realistic motivation. Applicants, therefore, submit that the imposed rejection of claims 1, 2 and 6-8 under 35 U.S.C. §103 for obviousness predicated upon

the AAPA in view of Carpenter et al. is not factually or legally viable and, hence, respectfully solicit withdrawal thereof.

IV. The Rejection of Claims 4 and 5 under 35 U.S.C. §103(a)

Claims 4 and 5 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the AAPA in view of Carpenter et al. and further in view of Carducci et al.

In response, it is submitted that the applied combination does not teach or suggest a plasma processing apparatus including all the limitations recited in claims 4 and 5, at least because these claims include all the limitations recited in independent claim 1. Applicants specifically note that Carducci et al. does not teach the protection tube recited in claim 1, and thus, does not cure the deficiency of the applied combination of the AAPA and Carpenter et al.

Accordingly, the claimed invention would not have been obvious, and withdrawal of the rejection of claims 4 and 5 is respectfully solicited.

V. The Rejection of Claims 9-12 and 16-21 under 35 U.S.C. §103(a)

Claims 9-12 and 16-21 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the AAPA in view of Carpenter et al., and further in view of Kennedy et al.

With respect to independent claim 11, Applicants submit that the applied combination of the AAPA, Carpenter et al. and Kennedy et al. does not disclose or suggest, among other things, the axial length of each piece of the protection tube which is defined by the gradient temperatures of the chamber during the plasma processing (see, the discussion on the rejection of independent claim 1). Kennedy et al. teaches a plasma processing chamber including a protection tube (e.g., ceramic liner). However, Kennedy et al. fails to teach providing a

protection tube composed of a plurality of pieces each having a length defined in accordance with the temperature gradient, and does not teach possible damage of the protection tube due to the temperature gradient that would occur during the plasma processing.

In addition, Applicants submit that there is no motivation to modify the AAPA based on the teachings of Carpenter et al. and Kennedy et al. to arrive at the claimed invention because these two references are silent on the positional relation between the plasma chamber and each pieces of the protection tube, as claimed. Thus, it is submitted that, in the absence of the teachings of the claimed invention, there is no evidentiary basis for modification of the AAPA based on Carpenter et al. and Kennedy et al. to arrive at the claimed invention

Accordingly, the applied combination of the AAPA, Carpenter et al. and Kennedy et al. does not disclose or suggest all the limitations recited in independent claim 11. Dependent claims 9, 10, 12 and 16-21 are also patentably distinguishable over the AAPA, Carpenter et al. and Kennedy et al. at least because those claims respectively include all the limitations recited in independent claims 1 and 11. Applicants, therefore, respectfully solicit withdrawal of the rejection of claims 9-12 and 16-21 under 35 U.S.C. §103(a) and favorable consideration thereof.

VI. The Rejection of Claims 14 and 15 under 35 U.S.C. §103(a)

Claims 14 and 15 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the AAPA in view of Carpenter et al., and further in view of Kennedy et al., and further in view of Carducci et al.

In response, it is submitted that the applied combination does not teach or suggest a plasma processing apparatus including all the limitations recited in claims 14 and 15, at least because they include all the limitations recited in independent claim 11. Applicants note that

Carducci et al. does not teach the protection tube recited in claim 11, and thus, does not cure the deficiencies of the applied combination of the AAPA, Carpenter et al. and Kennedy et al.

Accordingly, withdrawal of the rejection of claims 14 and 15 is respectfully solicited.

VII. New Claim 24

Applicants submit that new claim 24 is patentably distinguishable over the AAPA, Carpenter et al., Carducci et al. and Kennedy et al. For example, each piece of the protection tube recited in new claim 24 is so coupled to another piece so as to allow each piece to freely expand despite the fact that each piece is exposed to a temperature different from that of another piece. The protection tube of the present invention may be free from damage that would otherwise be caused by thermal stress and fatigue. This benefit is not taught by the cited references. Applicants, therefore, respectfully solicit favorable consideration thereof.

VIII. Conclusion

It should, therefore, be apparent that the imposed rejections have been overcome and that all pending claims are in condition for immediate allowance. Favorable consideration is, therefore, respectfully solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper,

including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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